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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/628,159

07/28/2003

Stephen John Fedigan

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EXAMINER

FAULK, DEVONA E

ART UNIT

PAPER NUMBER

2615

NOTIFICATION DATE

DELIVERY MODE

09/04/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/628,159	Applicant(s) FEDIGAN, STEPHEN JOHN	
	Examiner DEVONA E. FAULK	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-13 and 16-19 is/are rejected.
- 7) ☒ Claim(s) 8, 14 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/28/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, regarding the newly recited claim language, filed 11/20/07, with respect to the rejection(s) of claim(s) 1-19 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Pulfrey.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 1 recites " .. a second unit mounted for movement with said speaker cone at a position on the cone...". Claim 4 recites " ..wherein said second unit is mounted on said cone using a wedge..". The specification discloses that the coil is affixed to the cone using wedge 68 (Figure 1; page 6, lines 20-25). The coil is not on the cone, it is suspended from the cone or attached to the cone. This is lack of antecedent basis for the claim language noted above.

Claim Objections

3. Claims 1 and 4 are objected to because of the following informalities: Claim 1 recites " .. a second unit mounted for movement with said speaker cone at a position on the cone...". Claim 4 recites " ..wherein said second unit is mounted on said cone using a wedge..". The specification discloses that the coil is affixed to the cone using wedge 68 (Figure 1; page 6, lines 20-25). The coil is not on the cone, it is suspended from the

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cone or attached to the cone. Appropriate correction is required. The examiner has interpreted the claim to recite suspended from or attached to the cone.

4. Claims 8,14 and 15 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 recites “ said unit”. Claim 8 depends upon claim 7 which recites a first unit and a second unit. The examiner is not clear as to which unit is being referred to in claim 8.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pulfrey (US 5,493,620) in view of Saik et al. (US 4,312,118).

Regarding claim 1, Pulfrey discloses an apparatus for measuring speaker cone displacement relative to a fixed position in an audio speaker having a voice coil aligned

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with the cone along an axis (cone 21, voice coil 30, Figure 2; column 2, lines 19-55; column 5, lines 5-15), the apparatus comprising:

(a) a variable reluctance sensor device (cone motion velocity sensing structure, 40; column 4, lines 53-61); said sensor device including a first unit fixed relative to said fixed position (annular cylindrical permanent magnet 28, Figure 2; column 5, lines 9-15), and the a second unit mounted for movement with said speaker cone at a position radially offset from said axis (voice coil 30; column 5, lines 5-20);

(b) a signal injecting circuit coupled for injecting a predetermined input signal into-said one of said first and second units (signal amplification channel 10, Figure 2; predetermined input signal is the input from input signal source at terminals 13 of the signal amplification channel; column 4, line 61-column 5, line 5); and

(c) a signal receiving circuit coupled with said one of said first and second units-for receiving a signal resulting from modulation of said input signal due to variation of reluctance of said sensor device caused by displacement of said first unit relative to said second unit and for generating an indicating signal based upon said resulting signal; at least one signal characteristic of said indicating signal being related with said cone displacement (active differentiating circuit 60, Figure 2 reads on signal receiving circuit as claimed; column 6, lines 6-13 and lines 34-45; sensing coil 47, Figure 2; column 6, lines 9-13).

Pulfrey teaches of a coil but fails to disclose that the coil is attached to or suspended from the cone. Saik discloses a coil suspended from a cone (coil 30 is suspended from cone 22; column 5, lines 2-6). It would have been obvious to modify Pulfrey so that the coil is attached to the cone for the benefit of securing the coil in the loudspeaker.

Regarding claim 2, Pulfrey as modified by Saik discloses wherein said first unit is comprises one of an electromagnetic coil structure and a core structure; and wherein said second unit comprises the other of said electromagnetic coil structure and said core structure (See Pulfrey as applied above to the rejection of claim 1). All elements of claim 2 are comprehended by the rejection of claim 1.

Regarding claim 3, Pulfrey as modified by Saik discloses wherein said second unit is structure mounted at a substantially stationary node on said cone (See Pulfrey and Saik as applied above to the rejection of claim 1). All elements of claim 3 are comprehended by the rejection of claim 1.

Regarding claim 4, Pulfrey discloses wherein said second unit is structure is attached to or suspended from said cone using a wedge. Pulfrey as modified by Saik discloses a second unit attached to a cone (See Pulfrey and Saik as applied above to claim 1). Pulfrey and Saik fail to disclose that the second unit is attached using a wedge. The examiner takes official notice that a wedge is well known in the art . It would have been

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obvious to modify Pulfrey as modified so that the second unit is attached to the cone for the benefit of providing an alternative way of securing the second unit.

9. Claims 5- 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pulfrey (US 5,493,620) in view of Saik et al. (US 4,312,118) in further view of Joseph et al. (US 4,360,707).

Regarding claim 5 , Pulfrey as modified by Saik discloses a predetermined input signal; and said signal receiving circuit comprises a rectifying circuit coupled for rectifying said signal modulated by said variation of reluctance. Pulfrey as modified fails to disclose that the predetermined signal is a cyclic wave signal. Triangular waves as input signals are known in the art as taught by Joseph. Joseph discloses a triangle wave generator that provides a triangular wave input signal (32 Figure 1; this reads on cyclic). It would have been obvious to modify Pulfrey as modified as modified Winker so that the input signal is a triangular wave in order to provide a smooth sound.

Regarding claim 6, Pulfrey as modified by Saik discloses wherein said signal receiving circuit further comprises a filter coupled for filtering said rectified signal (Pulfrey's active differentiating circuit comprises a filter capacitor; Figure 1). Pulfrey as modified fails to disclose that the filter is a low pass filter. The examiner takes official notice that low pass filters are well known in the art. It would have been obvious to modify Pulfrey as modified so that the filter is a low pass filter for the benefit of passing only signals in the

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low frequency range.

Regarding claim 7, Pulfrey as modified by Saik discloses wherein said first unit comprises one of an electromagnetic coil structure and a core structure; and wherein said second unit comprises the other of said electromagnetic coil structure and said core structure See Pulfrey and Saik as applied above to claims 1 and 5). All elements of claim 7 are comprehended by the rejection of claim 5.

Regarding claim 9, Pulfrey as modified by Saik and Joseph disclose wherein said predetermined input signal is a substantially triangular wave signal (See Joseph as applied above to claim 7). All elements of claim 9 are comprehended by the rejection of claim 7.

10. Claims 10-13,16,18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pulfrey (US 5,493,620) in view of Joseph et al. (US 4,360,707).

Regarding claim 10, Pulfrey discloses an apparatus for measuring speaker cone displacement in an audio speaker the apparatus comprising:

- (a) an electromagnetic coil structure (voice coil 30; column 5, lines 5-20);
- (b) a core structure (annular cylindrical permanent magnet 28, Figure 2; column 5, lines 9-15); said core structure and said electromagnetic coil structure being mounted with said speaker to effect variable electromagnetic coupling between said core structure and said electromagnetic coil structure as said speaker cone moves (column 5, lines 6-

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30);

(c) a signal injecting circuit coupled with said electromagnetic coil structure for injecting a predetermined input signal into said electromagnetic coil structure for modulation by said variable magnetic coupling (signal amplification channel 10, Figure 2;

predetermined input signal is the input from input signal source at terminals 13 of the signal amplification channel; column 4, line 61-column 5, line 5); and

(d) a signal monitoring circuit coupled with said electromagnetic coil structure, for receiving and rectifying an output said modulated signal from said electromagnetic coil structure~ for generating an indicating signal based upon said output signal; at least one signal characteristic of said indicating signal being related with said cone displacement (active differentiating circuit 60, Figure 2 reads on signal receiving circuit as claimed; column 6, lines 6-13 and lines 34-45; sensing coil 47, Figure 2; column 6, lines 9-13).

Pulfrey discloses a predetermined input signal; and said signal receiving circuit comprises a rectifying circuit coupled for rectifying said signal modulated by said variation of reluctance. Pulfrey as modified fails to disclose that the predetermined signal is a cyclic signal. Triangular waves as input signals are known in the art as taught by Joseph. Joseph discloses a triangle wave generator that provides a triangular wave input signal (32 Figure 1; this reads on cyclic). It would have been obvious to modify Pulfrey as modified as modified Winker so that the input signal is a triangular wave in order to provide a smooth sound.

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Regarding claim 11, Pulfrey discloses (currently amended). measuring said speaker cone displacement relative to a fixed position in an audio speaker having a voice coil aligned with the cone along an axis, wherein one of said electromagnetic coil structure and said core structure is situated in fixed relation to said fixed position and the other of said electromagnetic coil structure and said core structure is mounted for movement with said speaker cone at a position on said cone radially offset from said axis (See Pulfrey and Joseph as applied above to claim 1, Figure 1). All elements of claim 11 are comprehended by the rejection of claim 10.

Regarding claim 12, Pulfrey discloses wherein said core structure is situated in fixed said fixed position speaker cone and said electromagnetic coil structure is mounted at said position offset from said axis. (Pulfrey, Figure 1; see Pulfrey as applied to claim 10 above). All elements of claim 12 are comprehended by the rejection of claim 10.

Regarding claim 13, Pulfrey as modified by Joseph discloses wherein said input signal is a substantially triangular wave signal. All elements of claim 13 are comprehended by the rejection of claim 10.

Regarding claim 16, Pulfrey discloses a method for monitoring speaker cone displacement in an audio speaker having a voice coil aligned with the cone along an axis; the apparatus comprising the steps of:

(a) providing an electromagnetic coil structure mounted offset from said axis for

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movement relative to a core structure (voice coil 30; column 5, lines 5-20;

annular cylindrical permanent magnet 28, Figure 2; column 5, lines 9-15);;

(b) injecting a predetermined input signal into said electromagnetic coil structure to effect variable magnetic coupling between said electromagnetic coil structure and said core structure as said speaker cone moves, thereby causing modulation of said input signal (signal amplification channel 10, Figure 2; predetermined input signal is the input from input signal source at terminals 13 of the signal amplification channel; column 4, line 61-column 5, line 5); and

(c) rectifying said modulated input signal to provide an indicating signal at least one signal characteristic of said which is related with said cone displacement (active differentiating circuit 60, Figure 2 reads on signal receiving circuit as claimed; column 6, lines 6-13 and lines 34-45; sensing coil 47, Figure 2; column 6, lines 9-13).

Pulfrey discloses a predetermined input signal; and said signal receiving circuit comprises a rectifying circuit coupled for rectifying said signal modulated by said variation of reluctance. Pulfrey as modified fails to disclose that the predetermined signal is a cyclic signal. Triangular waves as input signals are known in the art as taught by Joseph. Joseph discloses a triangle wave generator that provides a triangular wave input signal (32 Figure 1; this reads on cyclic). It would have been obvious to modify Pulfrey as modified as modified Winker so that the input signal is a triangular wave in order to provide a smooth sound.

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Regarding claim 18, Pulfrey as modified discloses wherein said predetermined input signal is a substantially triangular wave signal. All elements of claim 18 are comprehended by the rejection of claim 16.

Regarding claim 19, Pulfrey as modified discloses further comprising filtering said rectified signal to provide said indicating signal (Pulfrey's active differentiating circuit comprises a filter capacitor; Figure 1). All elements of claim 19 are comprehended by the rejection of claim 16.

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pulfrey (US 5,493,620) in view of Joseph et al. (US 4,360,707) in further view of Saik et al. (US 4,312,118).

Regarding claim 17, Pulfrey as modified by Joseph discloses wherein one of said ferrous core structure and said electromagnetic coil structure is situated. Pulfrey as modified by Joseph fail to disclose that one of the core and coil structure is situated at a substantially stationary node on said speaker cone. Saik discloses a coil suspended from a cone (coil 30 is suspended from cone 22; column 5, lines 2-6; this reads on situated at a substantially stationary node on said speaker cone). It would have been obvious to modify Pulfrey so that the coil is attached to the cone for the benefit of securing the coil in the loudspeaker.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devona E. Faulk/
Examiner, Art Unit 2615

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615

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